

# Popliteal fossa, Posterior compartment of leg & Sole of foot

**BY ANATOMY DEPARTMENT**

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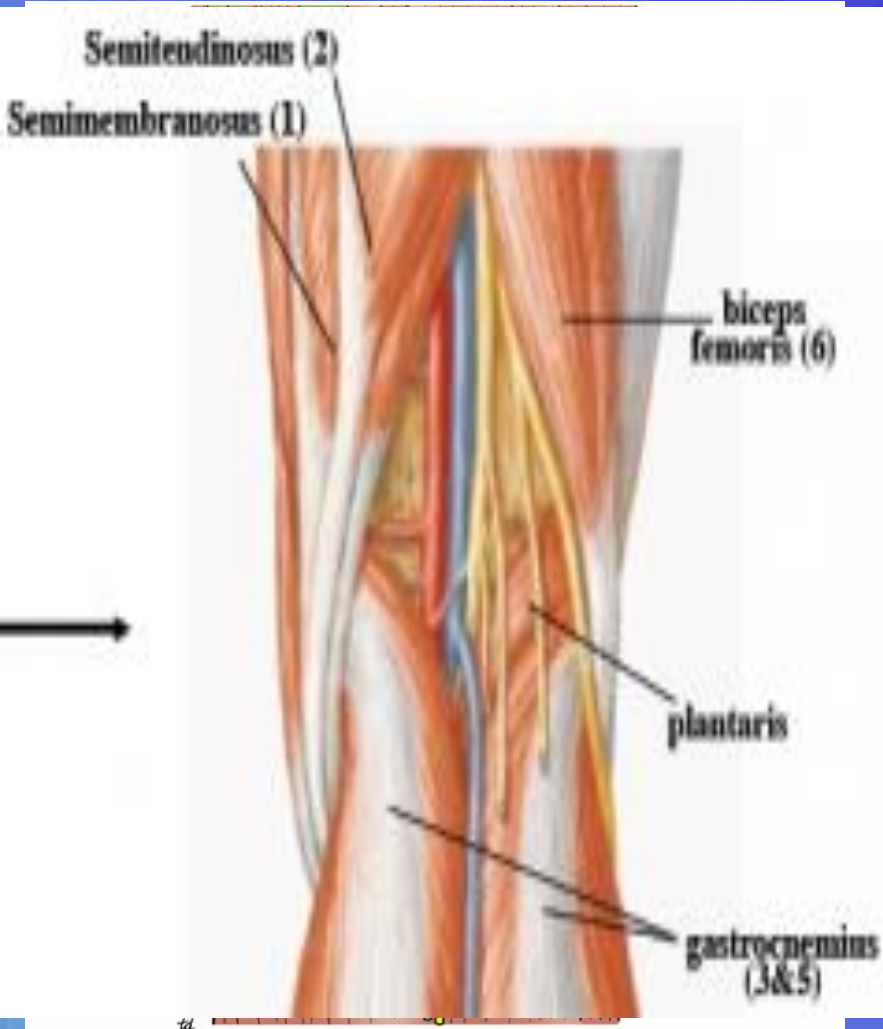
# OBJECTIVES

*At the end of this lecture the students should be able to know:*

- The location, boundaries & contents of the popliteal fossa
- The contents of posterior fascial compartment of Leg.
- The structures hold by retinacula at ankle.
- Layers forming in the sole of foot & bone those form the arches of the foot.

# Popliteal Fossa

Is a diamond-shaped intermuscular space at the back of knee



## Boundaries :

**Laterally:** *above:* biceps femoris.

**Below:** lateral head of gastrocnemius & plantaris

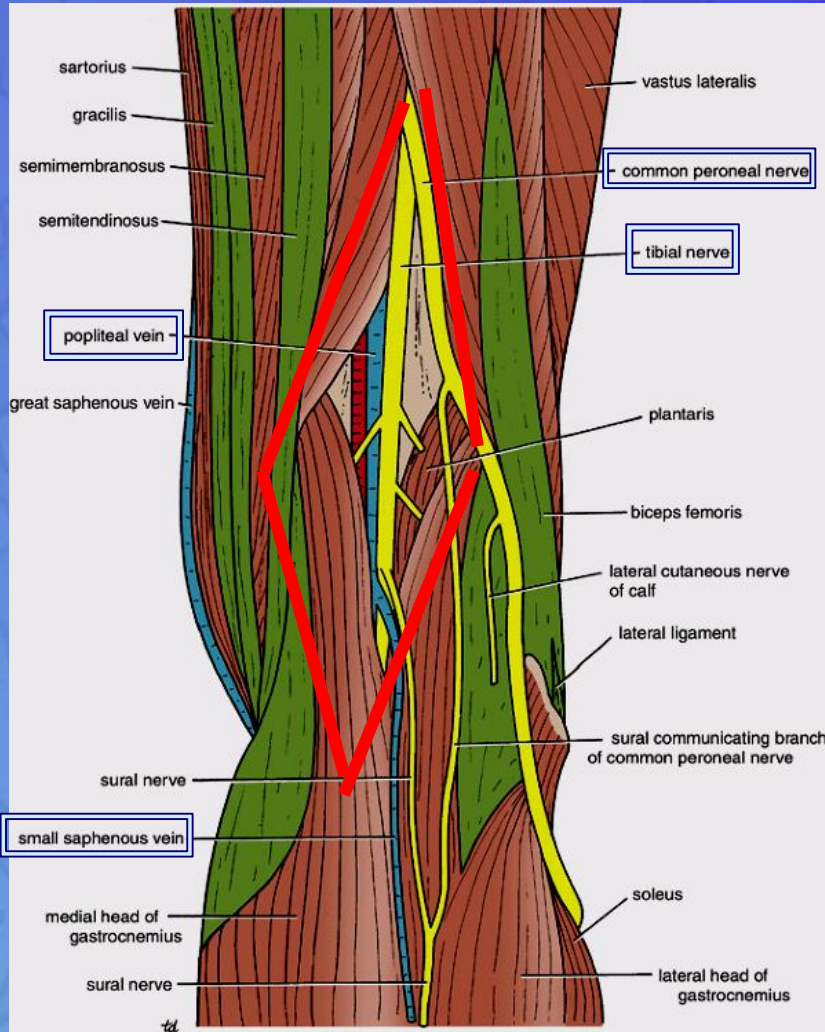
**Medially:** *above:* semimembranosus & semitendinosus.

**Below:** medial head of gastrocnemius

**Roof:** Skin, superficial fascia and deep fascia of the thigh.

**Floor:** popliteal surface of femur, posterior ligament of knee joint and popliteus muscle.

# Popliteal Fossa

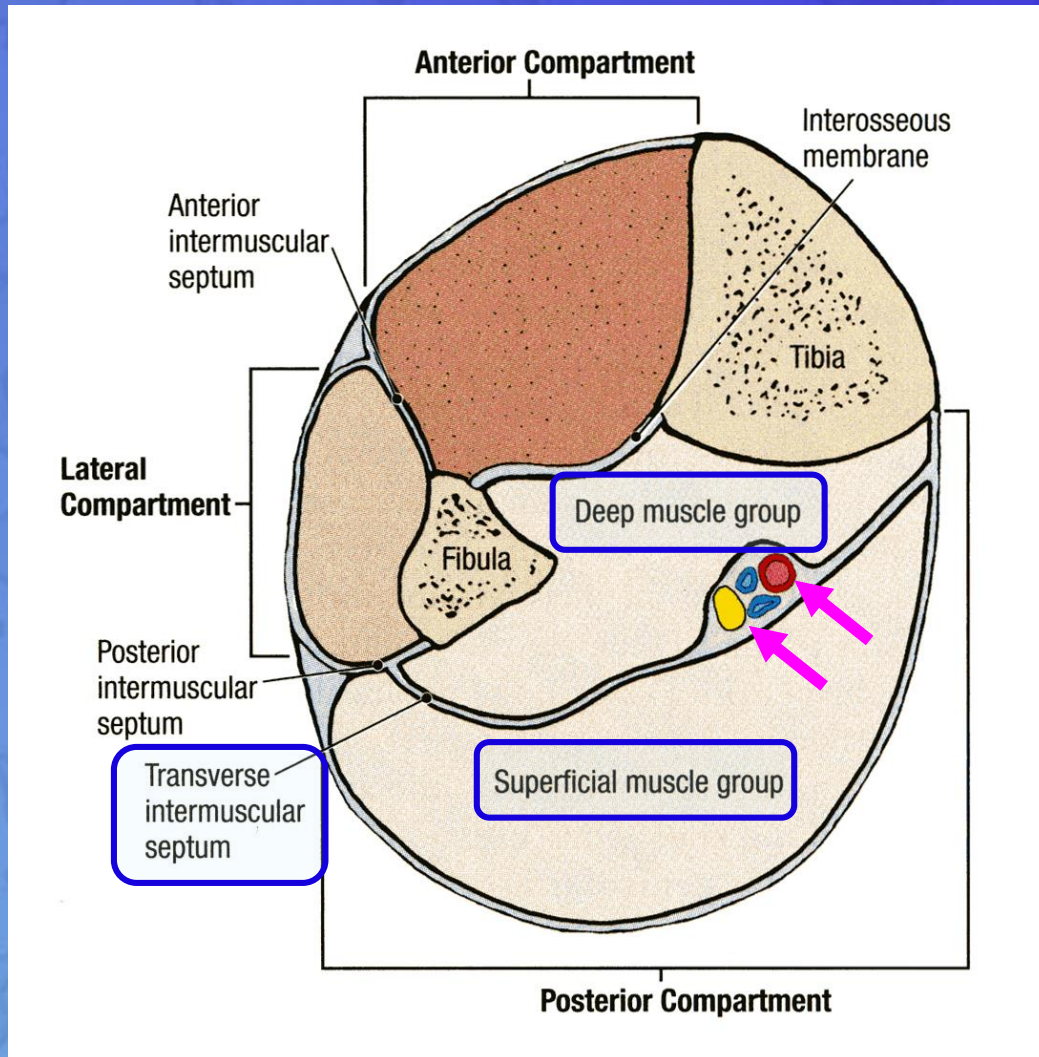


## Contents:

1. Popliteal vessels
2. Small saphenous vein
3. Tibial nerve.
4. Common peroneal nerve.
5. Posterior cut. nerve of thigh.
6. Connective tissue & popliteal lymph nodes.

**The deepest structure is popliteal artery.**

# CONTENTS OF THE POSTERIOR FASCIAL COMPARTMENT OF THE LEG



The transverse intermuscular septum of the leg is a septum divides the muscles of the posterior compartment into superficial and deep groups.

## Contents:

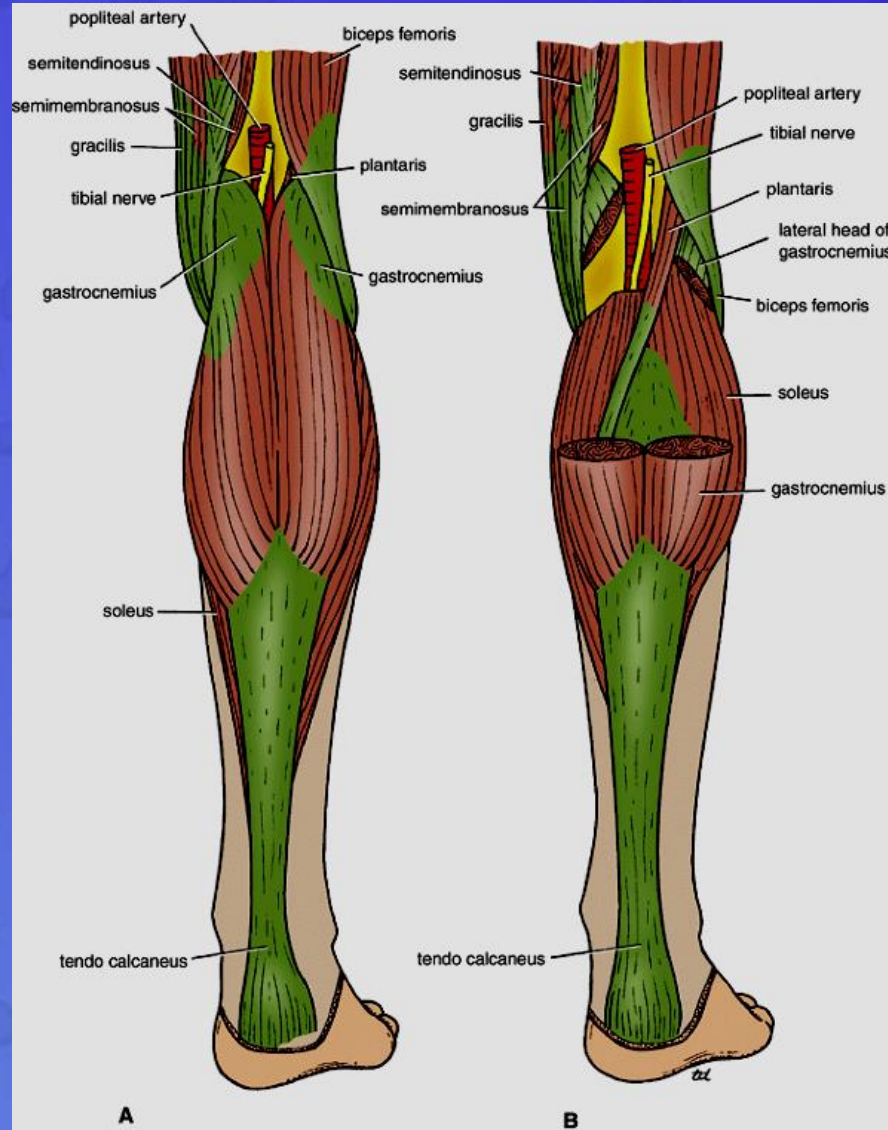
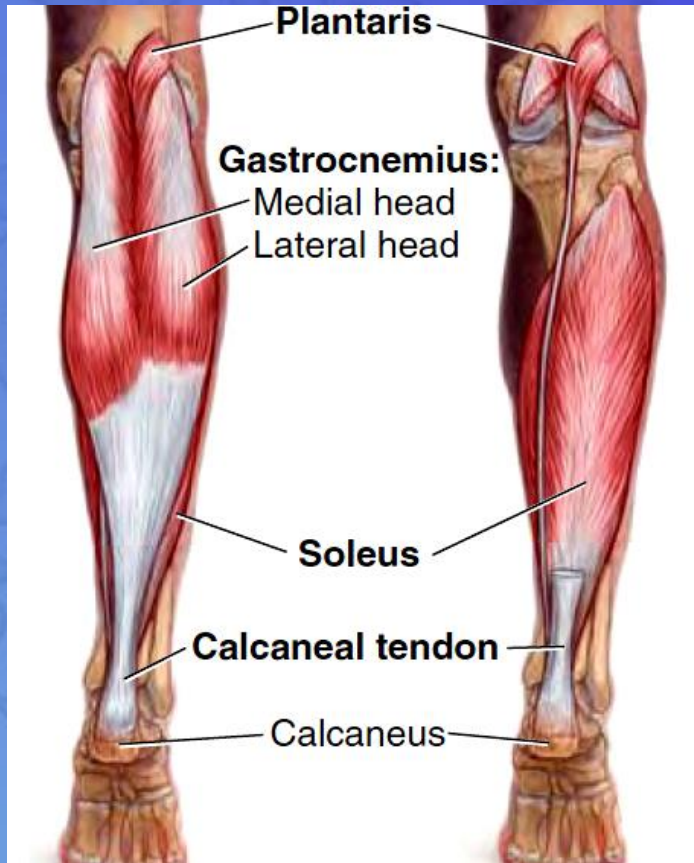
1. Superficial group of muscles
2. Deep group of muscles
3. Posterior tibial artery
4. Tibial nerve

# SUPERFICIAL GROUP

## 1. Gastrocnemius

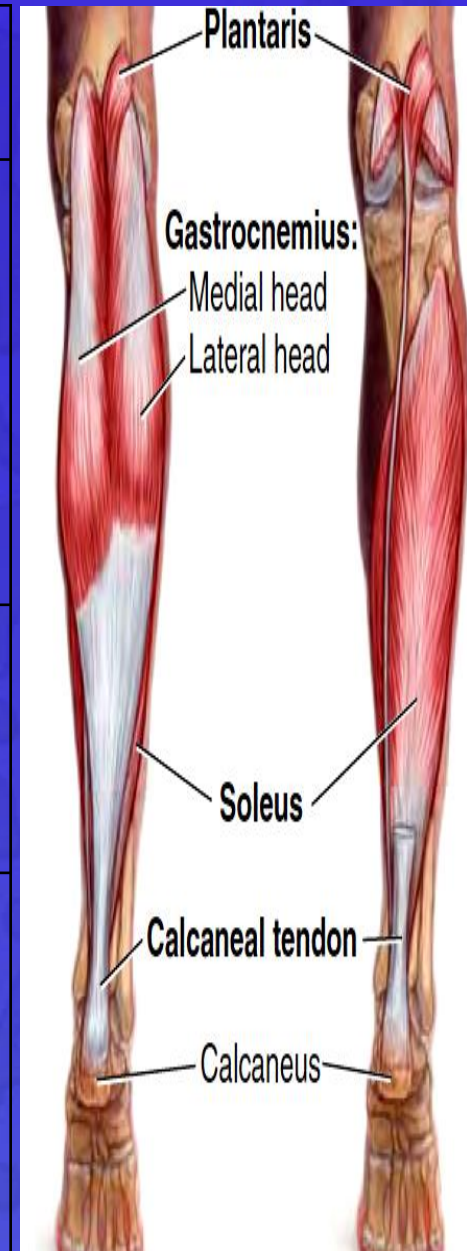
## 2. Plantaris

## 3. Soleus



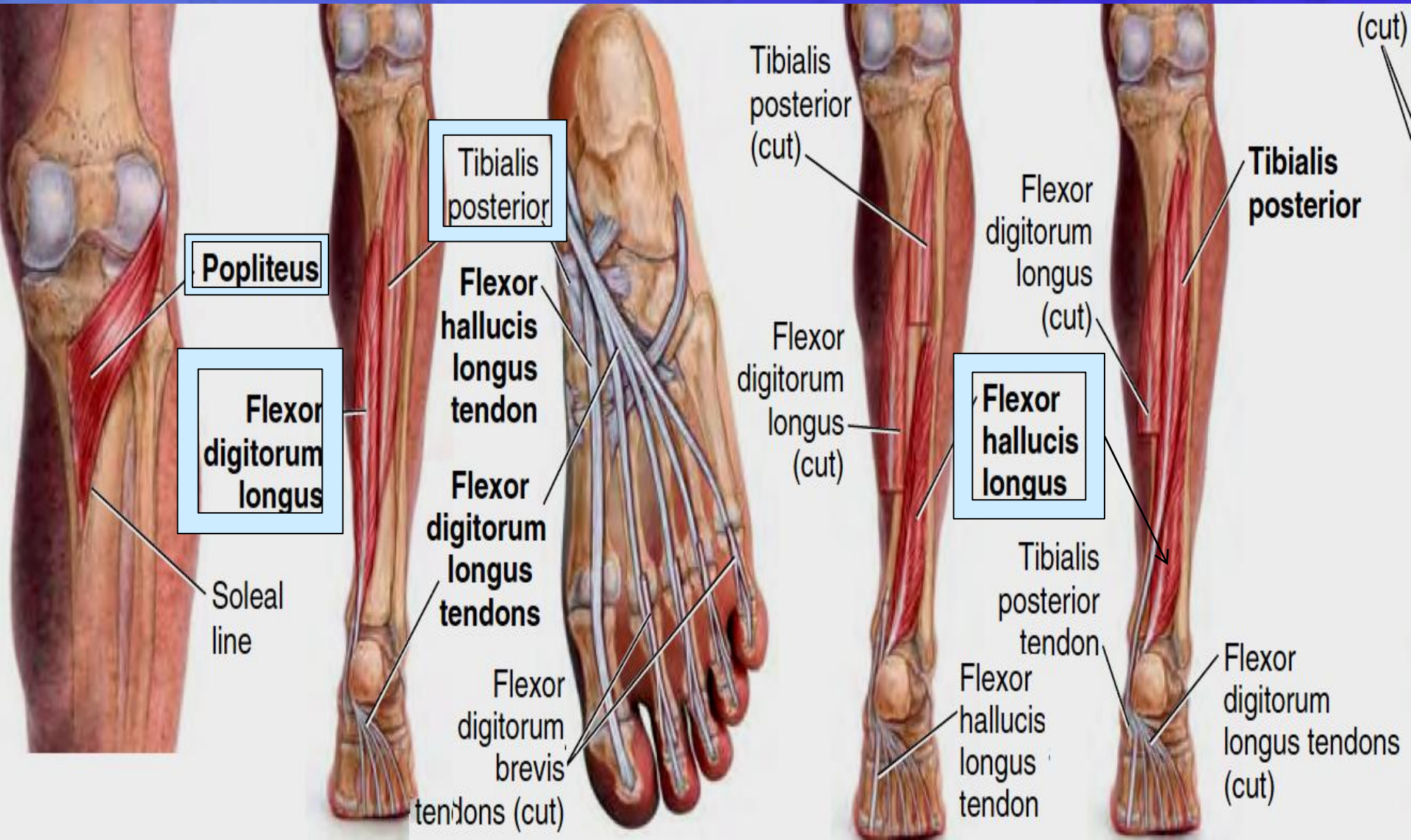
# SUPERFICIAL GROUP

Muscle	Origin	Insertion	Nerve	Action
<b>Gastrocnemius</b>	<b>Lateral head</b> from lateral condyle of femur & <b>medial head</b> from above medial condyle	Posterior surface of calcaneum <b>via tendo calcaneus</b>	Tibial	Plantar flexes foot at ankle joint; flexes knee joint
<b>Plantaris</b>	Lateral supracondylar ridge of femur	Posterior surface of calcaneum	Tibial	Plantar flexes foot at ankle joint; flexes knee joint
<b>Soleus</b>	Shafts of <b>tibia</b> and <b>fibula</b>	Posterior surface of calcaneum <b>via tendo calcaneus</b>	Tibial	Together with gastrocnemius and plantaris is <b>powerful plantar flexor</b> of ankle joint; provides main propulsive force in walking and running



# DEEP GROUP

1. Popliteus
2. Flexor digitorum longus
3. Tibialis posterior
4. Flexor hallucis longus





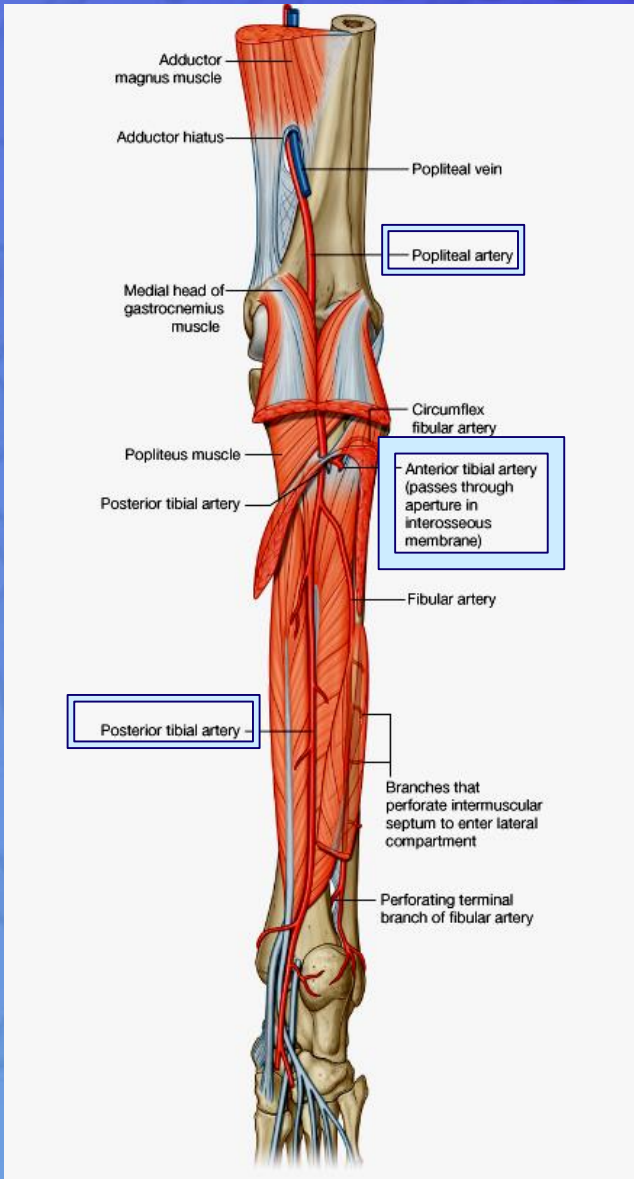
# DEEP GROUP

<b>Popliteus</b>	Groove on Lateral surface of lateral condyle of femur (Intracapsular)	Post surface of shaft of tibia above soleal line
<b>Flexor digitorum longus</b>	Posterior surface of shaft of tibia	Bases of distal phalanges of lateral four toes
<b>Flexor hallucis longus</b>	Posterior surface of shaft of fibula	Base of distal phalanx of big toe
<b>Tibialis posterior</b>	Posterior surface of shafts of tibia and fibula and interosseous membrane	Tuberosity of navicular bone and other neighboring tarsal bones.

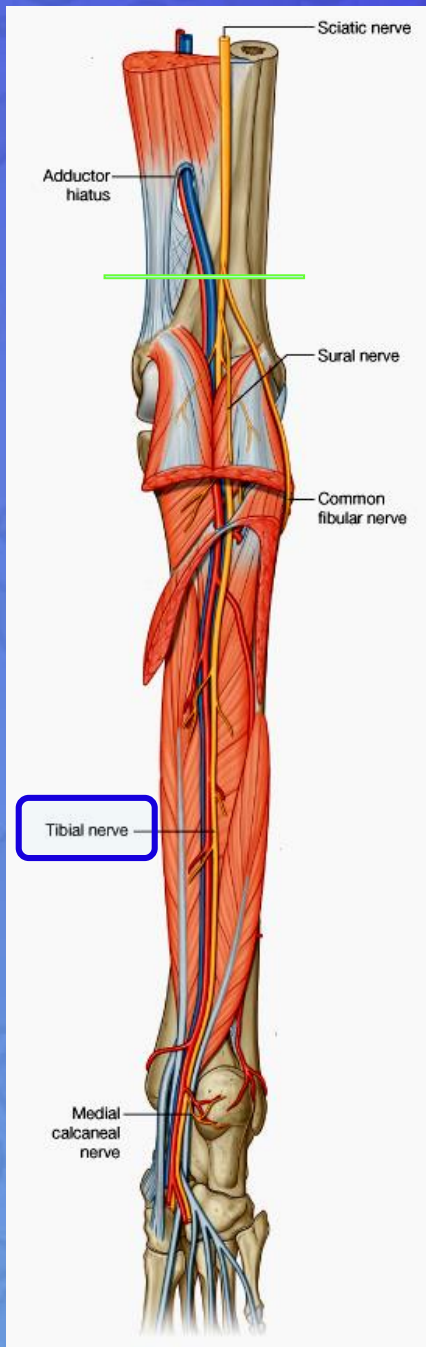


# POSTERIOR TIBIAL ARTERY

- It is one of the terminal branches of the popliteal artery.



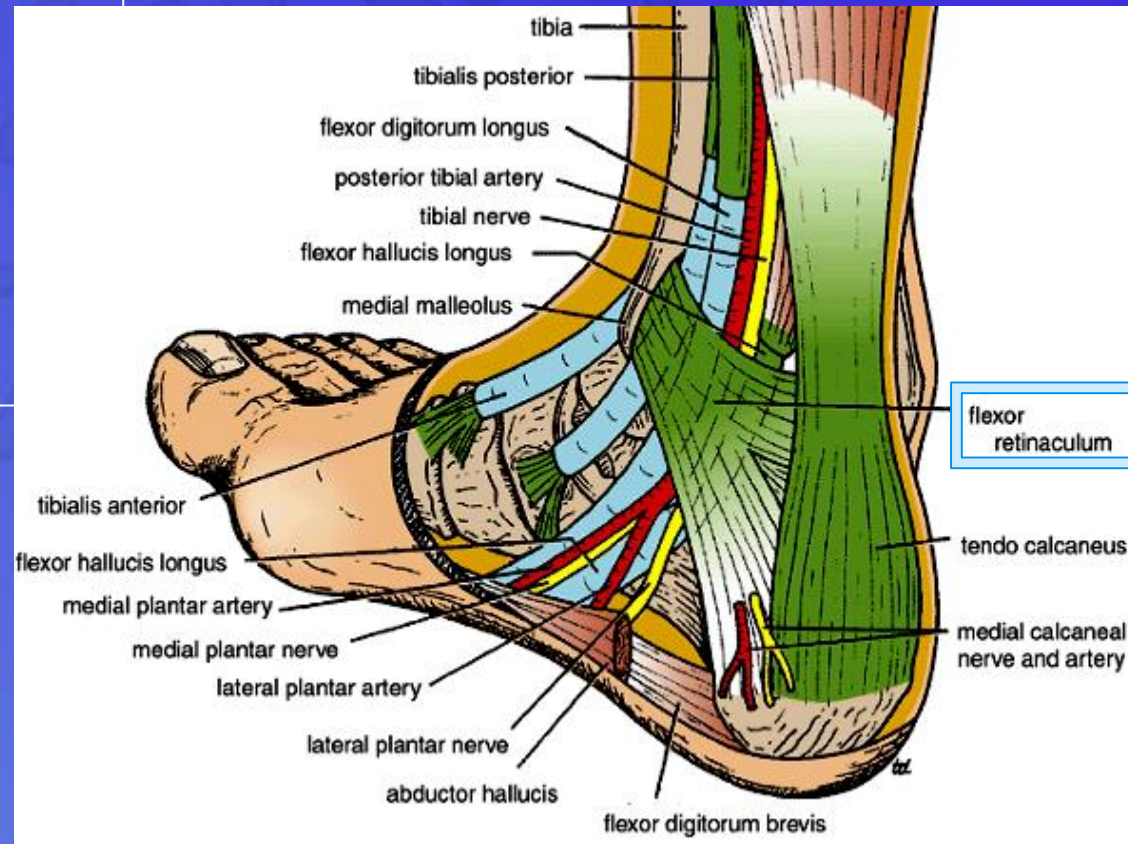
# TIBIAL NERVE



- It is the larger terminal branch of the sciatic nerve in the lower 1/3 of the back of the thigh

# Flexor Retinaculum

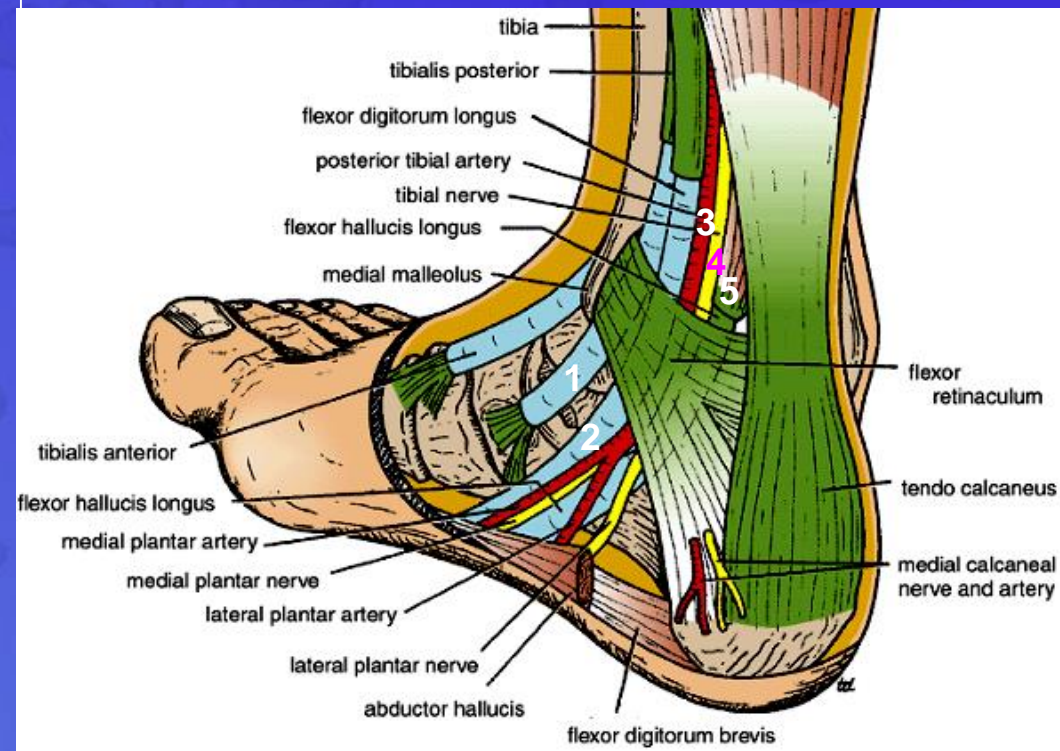
Extends from back of  
medial malleolus of  
tibia to  
medial side of  
calcaneum



# Structures passing posterior to medial malleolus, deep to flexor retinaculum

- *Medial to lateral*
- Tibialis posterior tendon
- Flexor digitorum longus tendon
- Posterior tibial artery with venae comitantes
- Tibial nerve
- Flexor hallucis longus tendon

*All the tendons are surrounded by a synovial sheath*



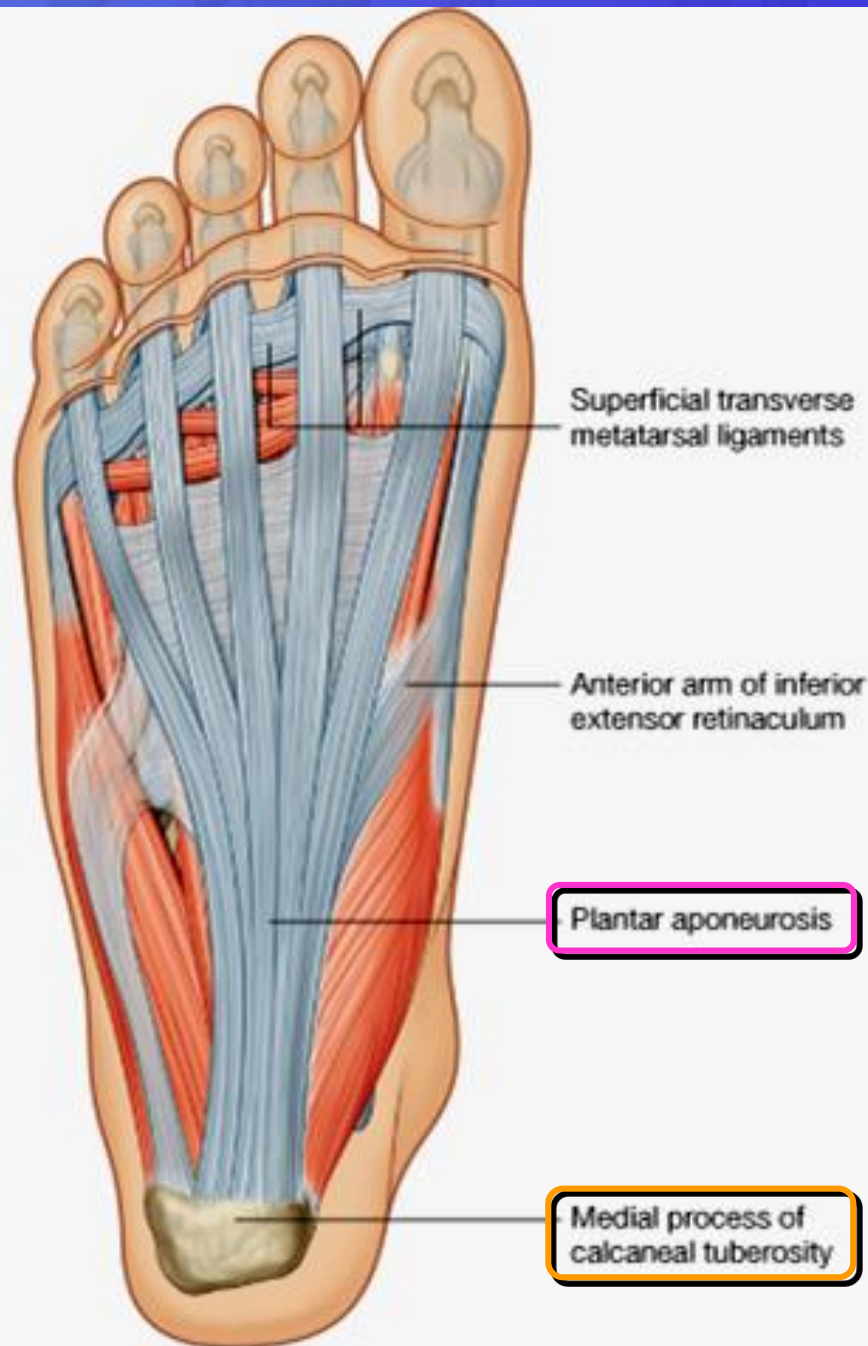


# SOLE OF THE FOOT

- **The skin** of the sole of the foot is **thick and hairless**
- The skin of the sole shows a **few flexure creases** at the sites of skin movement
- **Sweat glands** are present in large numbers

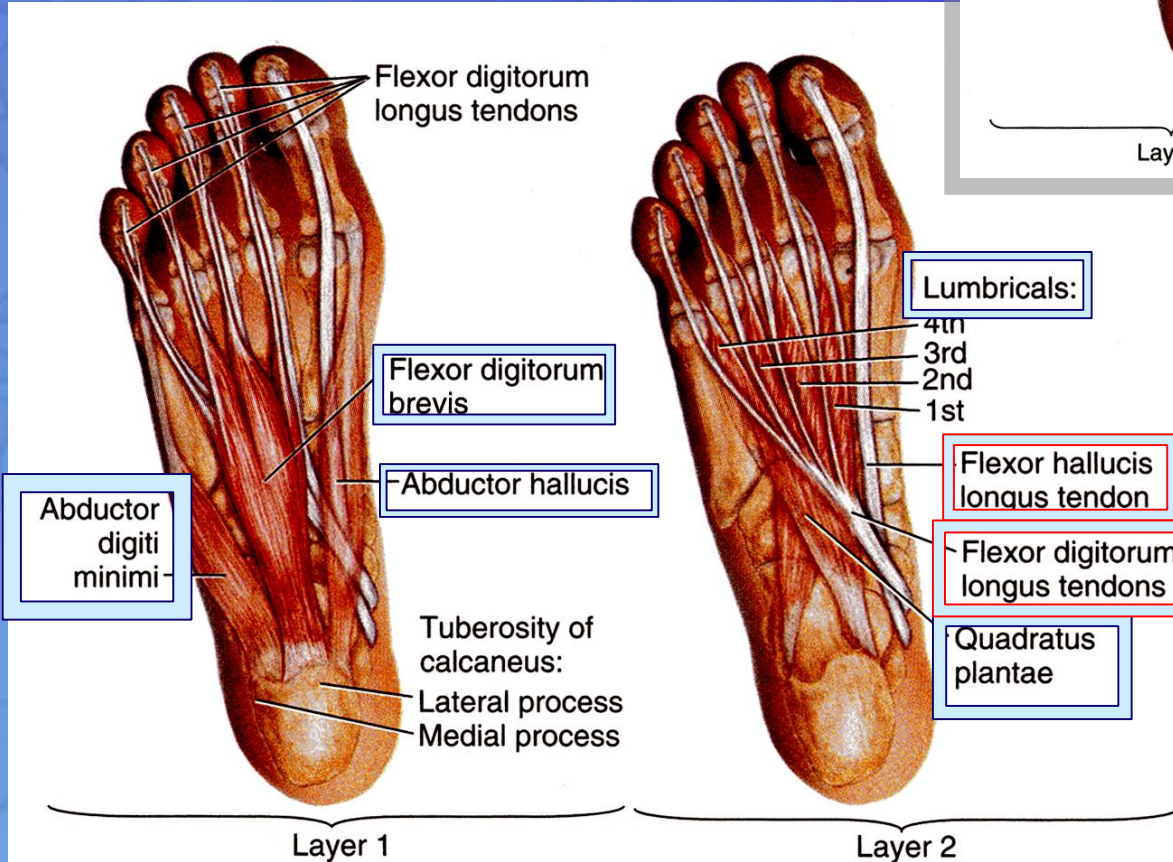
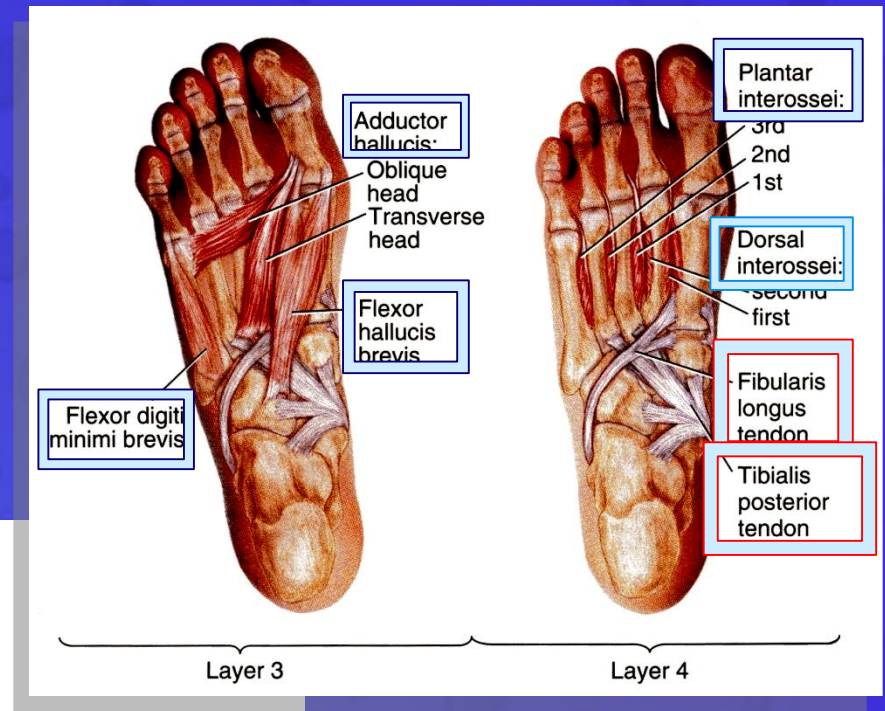
# DEEP FASCIA

- The **plantar aponeurosis** is a triangular thickening of the deep fascia that protects the underlying nerves, blood vessels, and muscles.
- Its **apex** is attached to the *medial and lateral tubercles* of the **calcaneum.**
- The **base** of the aponeurosis divides into **five slips** that pass into the **toes.**

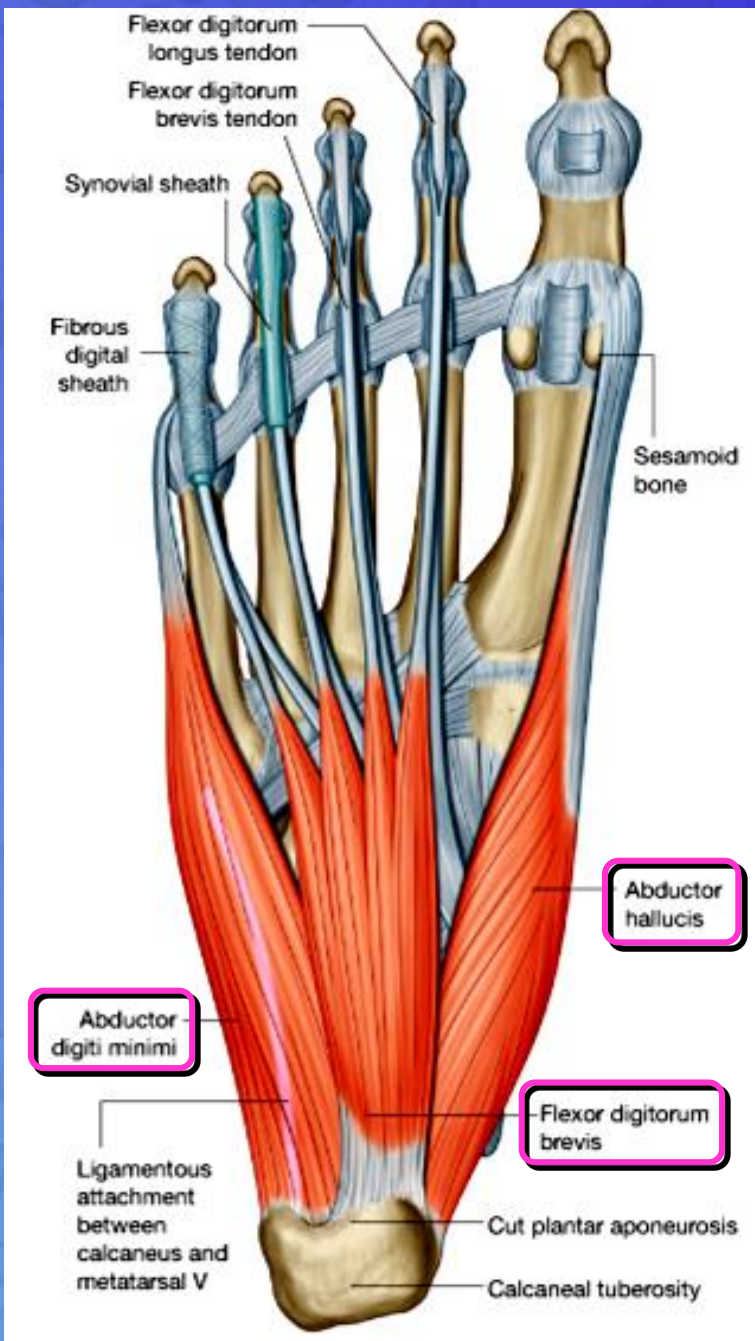


# MUSCLES OF THE SOLE OF THE FOOT

The muscles of the sole are conveniently described in **four layers** from superficial to deep.

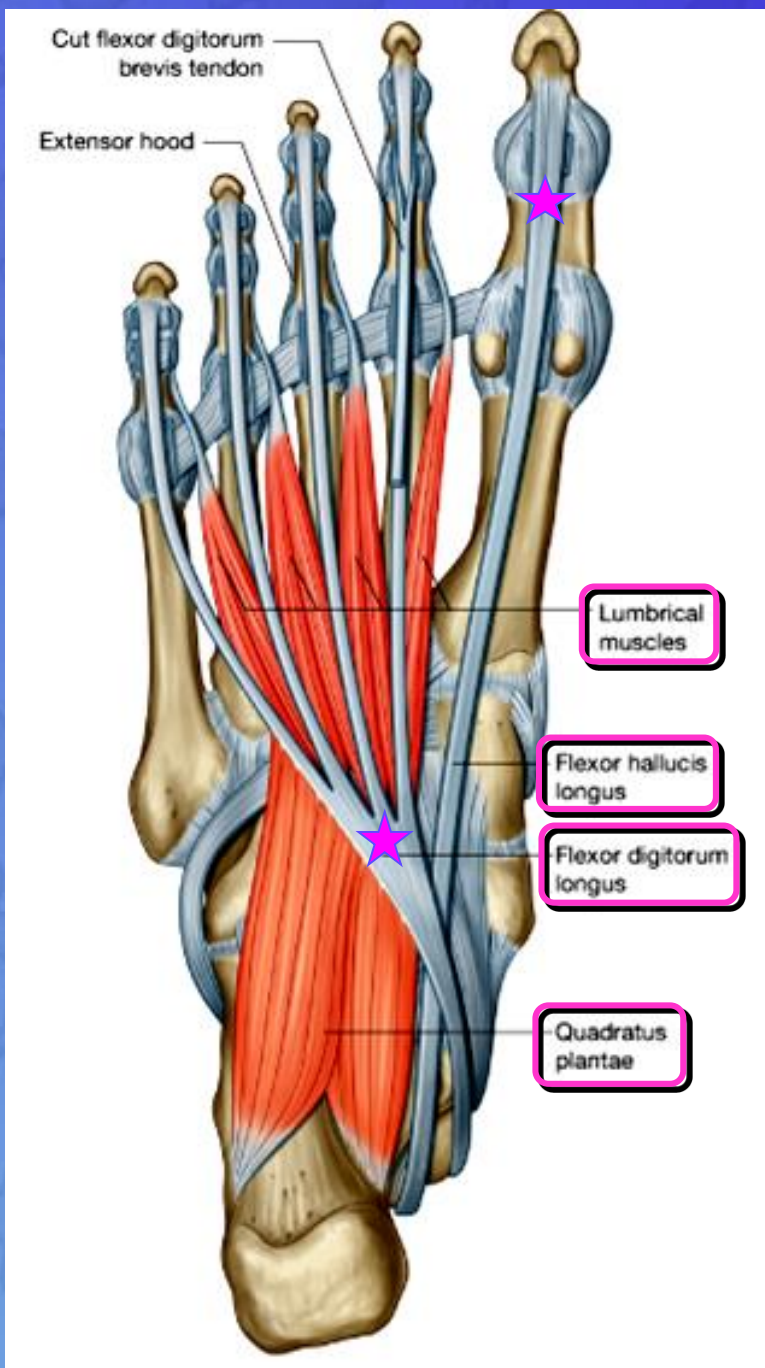






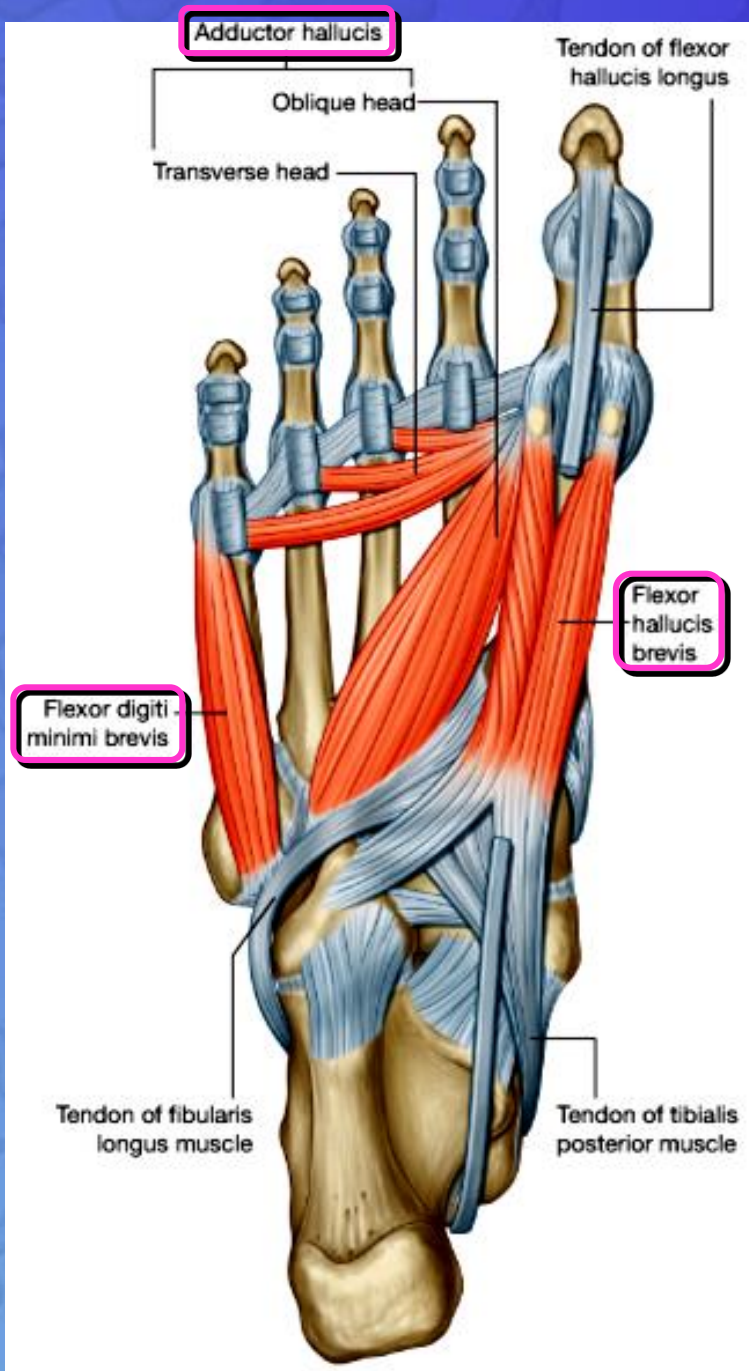
## First Layer

1. Abductor hallucis,
2. Flexor digitorum brevis,
3. Abductor digiti minimi



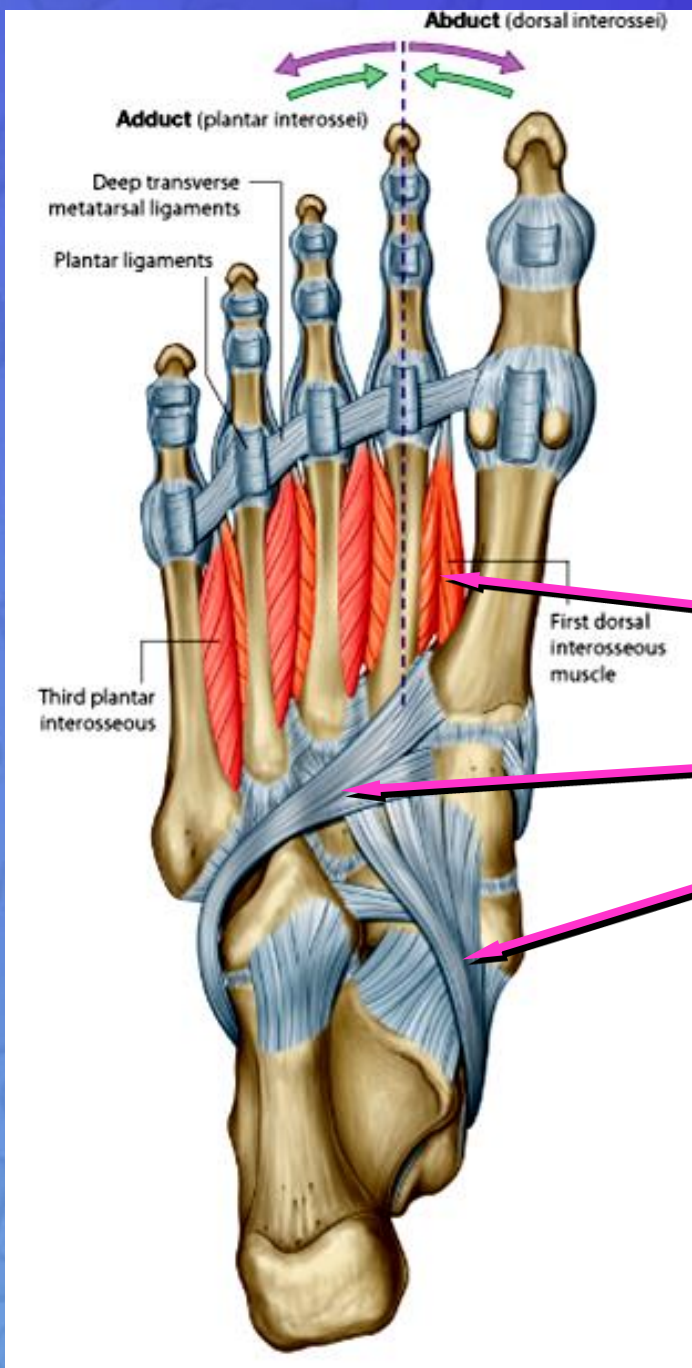
## Second Layer

1. Quadratus plantae,
2. Lumbricals,
3. Flexor digitorum longus tendon,
4. Flexor hallucis longus tendon



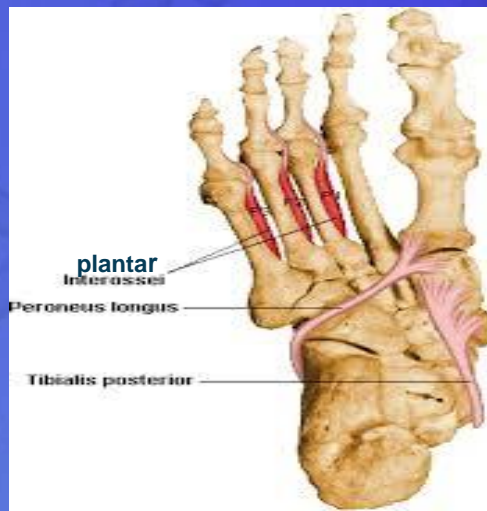
## Third Layer

1. Flexor hallucis brevis
2. Adductor hallucis
3. Flexor digiti minimi brevis

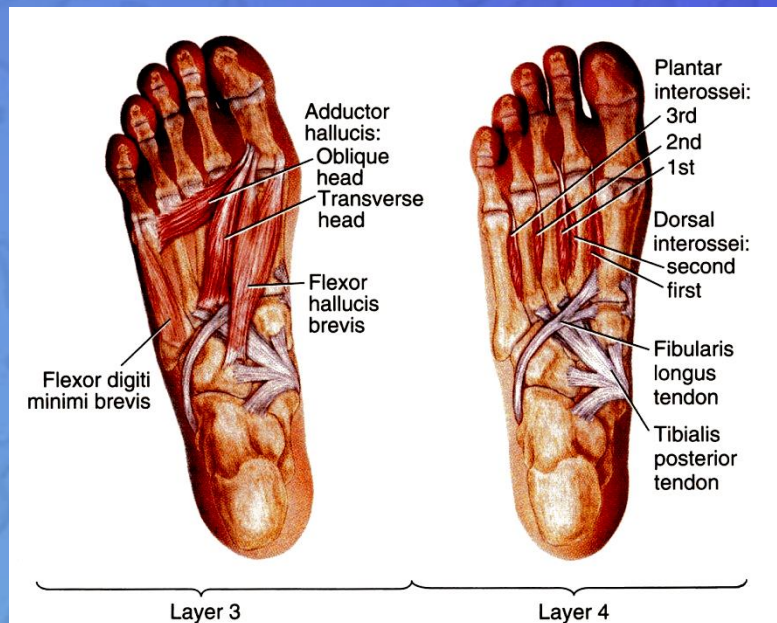
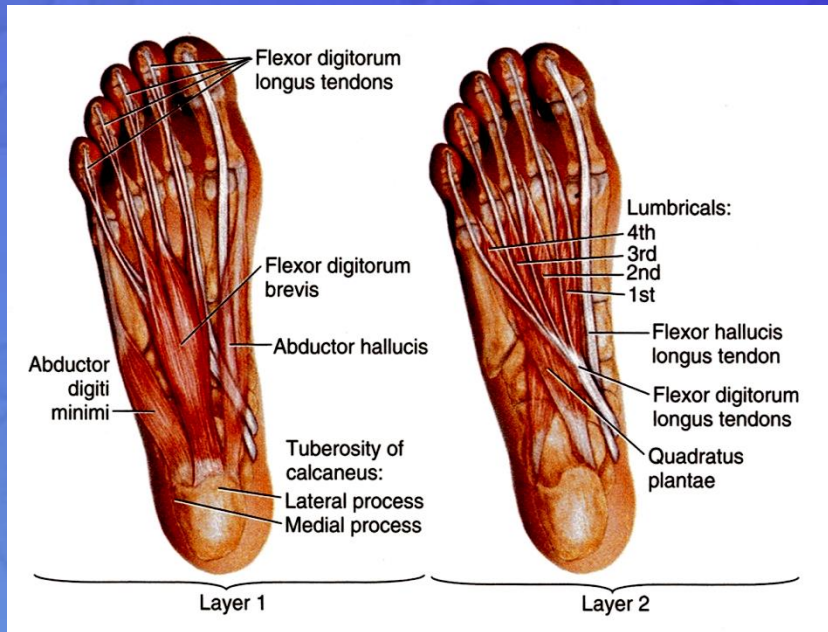


# Fourth Layer

1. Interossei, (3 plantar + 4 dorsal).
2. Peroneus longus tendon,
3. Tibialis posterior tendon



# Function of small muscles of sole of Foot



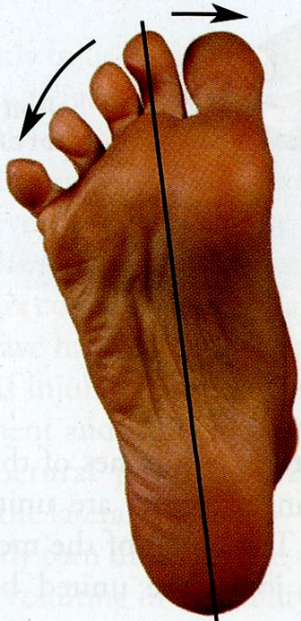
- Unlike the small muscles of the hand, the **sole muscles** have few delicate functions and are chiefly concerned with supporting the arches of the foot.
- Although their names would suggest control movements of individual toes, this function is rarely used in most people



(A) Flexion



(B) Extension



(C) Abduction



(D) Adducted  
(relaxed position)

Movement	Muscles <sup>a</sup>
Metatarsophalangeal joints	
Flexion (A)	<b>Flexor digitorum brevis</b> <b>Lumbricals</b> <b>Interossei</b> <b>Flexor hallucis brevis</b> <b>Flexor hallucis longus</b> Flexor digit minimi brevis Flexor digitorum longus
Extension (B)	<b>Extensor hallucis longus</b> <b>Extensor digitorum longus</b> <b>Extensor digitorum brevis</b>
Abduction (C)	<b>Abductor hallucis</b> <b>Abductor digiti minimi</b> <b>Dorsal interossei</b>
Adduction (D)	<b>Adductor hallucis</b> <b>Plantar interossei</b>

<sup>a</sup>Muscles in boldface are chiefly responsible for the movement; the other muscles assist them.



(A) Flexion

(B) Extension



(C) Abduction

(D) Adducted  
(relaxed position)

Movement	Muscles <sup>a</sup>
Interphalangeal joints	
Flexion (fig. A)	<b>Flexor hallucis longus</b> <b>Flexor digitorum longus</b> <b>Flexor digitorum brevis</b> Quadratus plantae
Extension (fig. B)	<b>Extensor hallucis longus</b> <b>Extensor digitorum longus</b> <b>Extensor digitorum brevis</b>

<sup>a</sup>Muscles in boldface are chiefly responsible for the movement; the other muscles assist them.

# Arches of Foot



## ➤ Medial longitudinal arch

Is formed of calcaneum, talus, navicular, 3 cuneiform bones, and first medial 3 metatarsal bones.

## ➤ Lateral longitudinal arch

Is formed of calcaneum, cuboid & lateral 4<sup>th</sup> & 5<sup>th</sup> metatarsal bones

## ➤ Transverse arch

Lies at the level of **tarso-metatarsal joints**, formed of bases of metatarsal bones, cuboid & 3 cuneiform bones.

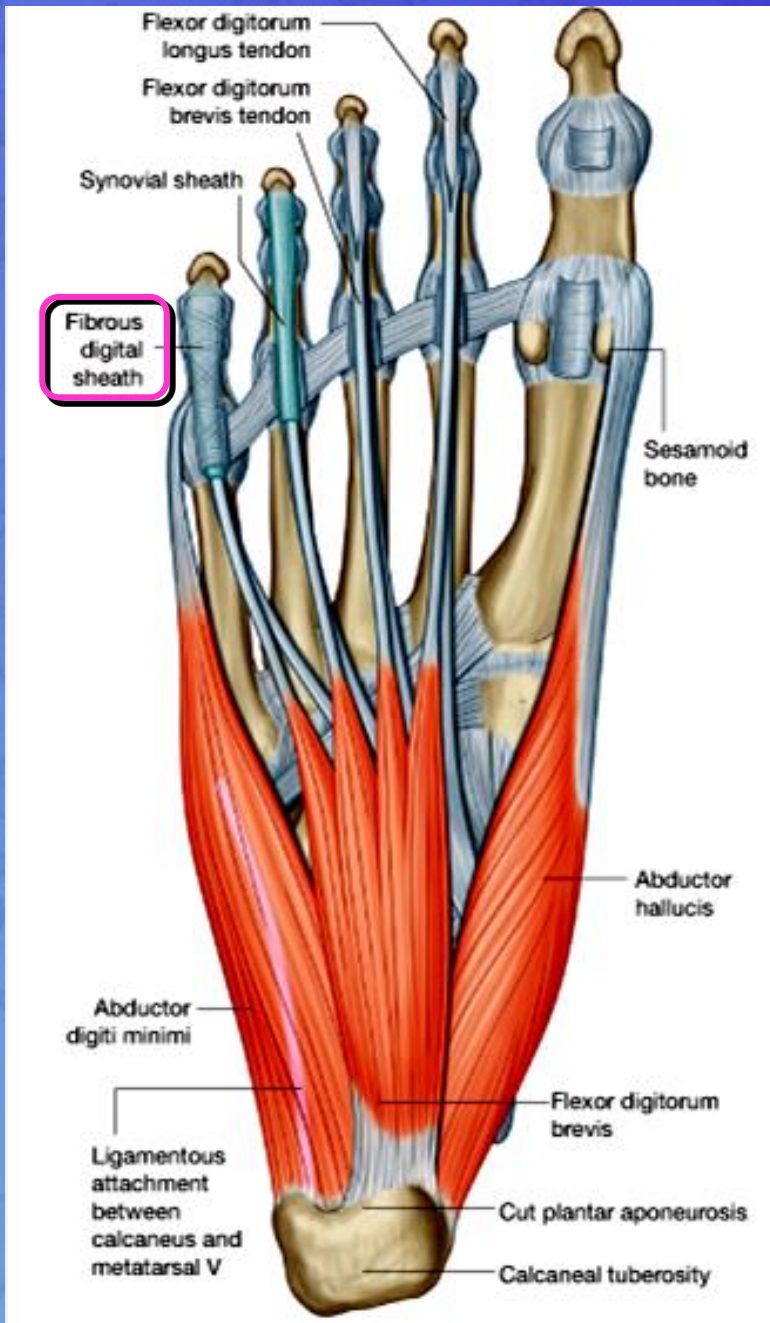


# Function of Arches of the Foot

- Weight bearing
- Support walking & running
- Provide potential space for neurovascular bundle of the sole
- Act as shock absorber
- *In young child the foot appears to be flat because of presence of a large amount of subcutaneous fat on the sole of foot*

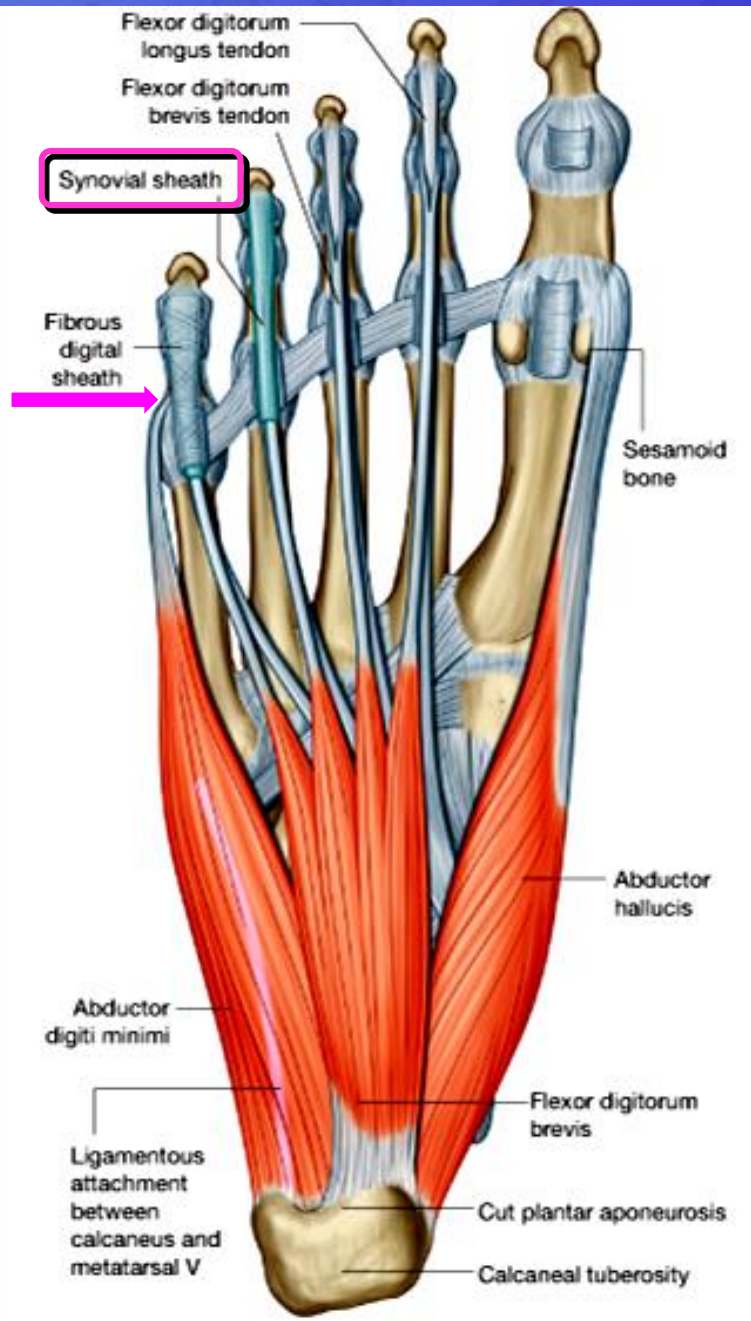
# Fibrous Flexor Sheaths

- The inferior surface of each toe, from the head of the metatarsal bone to the base of the distal phalanx, is provided with a **strong fibrous sheath**, which is attached to the **sides of the phalanges**.
- **The fibrous sheath**, together with the inferior surfaces of the phalanges and the interphalangeal joints, **forms a blind tunnel** in which lie the **flexor tendons of the toes**.



# Synovial Flexor Sheaths

The tendons of the **flexor hallucis longus** and the **flexor digitorum longus** are surrounded by **synovial sheaths**



*THANK YOU*